

AMENDMENT TO THE CLAIMS:

This listing of claims will replace all prior versions of claims in the application:

LISTING OF CLAIMS:

1-29. (CANCELLED)

30. (CURRENTLY AMENDED) A magnetic head, comprising:

an etch stop layer;

a transfer layer positioned above the etch stop layer with a trench formed therein, walls of the trench tapering together towards the etch stop layer; and

a pole tip layer situated in the trench to define a pole tip structure flanked at least in part by the transfer layer;

wherein at least one of an upper surface and a lower surface of at least one of the etch stop layer and the transfer layer remains in co-planar relationship with at least one of an upper surface and a lower surface of the pole tip structure,

wherein a continuously planar portion of the etch stop layer is coextensive with and extends beyond the at least one of the upper surface and a lower surface of the pole tip structure in a direction parallel to a plane of deposition of the etch stop layer and parallel to an air bearing surface of the head.

31. (PREVIOUSLY PRESENTED) A magnetic head, comprising:

an etch stop layer; and

a pole situated on top of the etch stop layer, walls of a portion of the pole tapering together towards the etch stop layer;

wherein at least one of an upper surface and a lower surface of the etch stop layer remains in co-planar relationship with at least one of an upper surface and a lower surface of the portion of the pole,

wherein a continuously planar portion of the etch stop layer is coextensive with and extends beyond the at least one of the upper surface and a lower surface of the portion of the pole in a direction parallel to a plane of deposition of the etch stop layer and parallel to an air bearing surface of the head.

32. (PREVIOUSLY PRESENTED) A disk drive system, comprising:
a magnetic recording disk;
a magnetic head including:
an etch stop layer, and
a pole situated on top of the etch stop layer, walls of a portion of the pole tapering together towards the etch stop layer,
wherein at least one of an upper surface and a lower surface of the etch stop layer remains in co-planar relationship with at least one of an upper surface and a lower surface of the portion of the pole,
wherein a continuously planar portion of the etch stop layer is coextensive with and extends beyond the at least one of the upper surface and a lower surface of the portion of the pole in a direction parallel to a plane of deposition of the etch stop layer and parallel to an air bearing surface of the head;
an actuator for moving the magnetic head across the magnetic recording disk so the magnetic head may access different regions of the magnetic recording disk; and
a controller electrically coupled to the magnetic head.

33. (CURRENTLY AMENDED) A disk drive system, comprising:
a magnetic recording disk;
a magnetic head including:
an etch stop layer,
a transfer layer positioned above the etch stop layer with a trench formed therein, walls of the trench tapering together towards the etch stop layer, and

a pole tip layer situated in the trench to define a pole tip structure flanked at least in part by the transfer layer,

wherein at least one of an upper surface and a lower surface of at least one of the etch stop layer and the transfer layer remains in co-planar relationship with at least one of an upper surface and a lower surface of the pole tip structure,

wherein a continuously planar portion of the etch stop layer is coextensive with and extends beyond the at least one of the upper surface and a lower surface of the portion of the pole in a direction parallel to a plane of deposition of the etch stop layer and parallel to an air bearing surface of the head;

an actuator for moving the magnetic head across the magnetic recording disk so the magnetic head may access different regions of the magnetic recording disk; and
a controller electrically coupled to the magnetic head.

34. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 31, wherein the etch stop layer includes a non-magnetic material.
35. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 31, wherein the etch stop layer includes an insulator.
36. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 31, wherein the etch stop layer is deposited utilizing a sputtering operation.
37. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 31, wherein a planarization operation is performed on the etch stop layer.
38. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 31, further comprising a transfer layer positioned above the etch stop layer with a trench formed therein, wherein the transfer layer includes a material capable of being ion-etched.

39. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 31, further comprising a transfer layer positioned above the etch stop layer with a trench formed therein, wherein an adhesion layer is deposited above the transfer layer.
40. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 39, wherein the adhesion layer includes a material selected from the group consisting of Si, Ta, Cr, and Ti.
41. (CURRENTLY AMENDED) The magnetic head as recited in claim ~~39~~ 31, wherein further comprising a transfer layer located along the walls of the portion of the pole, and further comprising a planarization stop layer is deposited above the adhesion transfer layer, wherein an upper surface of the portion of the pole is about coplanar with the planarization stop layer.
42. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 41, wherein the planarization stop layer includes a material selected from the group consisting of C, SiN_x, Ta, and Ti.
43. (CURRENTLY AMENDED) The magnetic head as recited in claim ~~41~~, wherein a planarization operation is performed on the pole tip layer ~~30~~, further comprising a planarization stop layer deposited above the transfer layer, wherein an upper surface of the pole tip structure is about coplanar with the planarization stop layer.
44. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 41, wherein a transfer layer is deposited above the planarization stop layer.

45. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 30, wherein the pole tip layer includes a ferromagnetic material.
46. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 30, wherein the pole tip layer includes a material selected from the group consisting of NiFe and CoFe.
47. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 30, wherein the pole tip layer is deposited utilizing at least one of ion beam deposition, sputtering, and electroplating.
48. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 30, wherein an upper surface of the pole tip layer is located above a plane of the upper surface of the transfer layer.
49. (CURRENTLY AMENDED) The magnetic head as recited in claim 31, further comprising a transfer layer positioned above the etch stop layer with a trench formed therein, wherein the upper surface of the pole tip is located above a plane of the upper surface of the transfer layer.
50. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 30, wherein an adhesion layer is deposited above the pole tip layer.
51. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 50, wherein the adhesion layer includes a material selected from the group consisting of Si, Ta, Cr, and Ti.
52. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 50, wherein a planarization stop layer is deposited above the adhesion layer.

53. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 52, wherein the planarization stop layer includes a material selected from the group consisting of C, SiN_x, Ta, and Ti.
54. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 52, wherein a capping layer is deposited above the planarization stop layer.
55. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 54, wherein a planarization operation is performed on the capping layer.
56. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 55, wherein the capping layer remains over the pole tip structure after the planarization operation.
57. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 56, wherein a reactive ion etching operation is performed to remove the planarization stop layer surrounding the pole tip structure.
58. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 57, wherein another planarization operation is performed on a remaining portion of the pole tip layer surrounding the pole tip structure.
59. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 58, wherein another reactive ion etching operation is performed on a remaining portion of the planarization stop layer situated above the pole tip structure.
60. (PREVIOUSLY PRESENTED) The magnetic head as recited in claim 59, wherein a planarization operation is performed on a remaining portion of the pole tip layer situated above the transfer layer.